

Work Order ID 85986

June-19-12 1:15:35 PM

85986

Page 1

Item ID: D212-664-101TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2

Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJDate: 12/06/19

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								

D212-664-141	Rev D (DEO)
--------------	-------------

100 0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Mori Seiki CNC Lathe Large

Memo 0.00

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-Blend transition lines only, **do not sand whole tube**

FOLIO REV: ADWG REV: D

*Use mill bastard file, brush file repeatedly with file card.

*Do not use sandpaper coarser than 320 grit.

110 QC1- Inspect dimensions to dimension sheet 0.00

110

QC

Quality Control

Memo 0.00

1 6
mgnl
12/07/16

mgnl
12/07/16

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Page 2

Item ID: D212-664-101TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2Start Date: 19/06/2012 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	*NR1*
						Stop	*NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* Mori Seiki	MORI SEIKI CNC LATHE LARGE Memo 1-Turn second side as per Folio FA113	0.00							
	2-Blend transition lines only, **do not sand whole tube**: *Use mill bastard file, brush file repeatedly with file card. *Do not use sandpaper coarser than 320 grit.								
	FOLIO REV: AA DWG REV: D								
	3-Remove sand and plugs								
130 *130* QC Quality Control	QC1- Inspect dimensions to dimension sheet Memo + PERFORM ULTRA SONIC MEASUREMENT	0.00							

Amal
12/07/16

Amal
12/07/16

NCR: Yes / No

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order: _____	DISPOSITION	AGAINST DEPARTMENT/PROCESS					
Part No. _____	Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> Other <input type="checkbox"/>	Engineering <input type="checkbox"/> Quality <input type="checkbox"/>		
NCR No. _____							

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Offset/Setup									
Other									
Process									
Supplier									
Training									
Unauthorized									

FAULT CATEGORY

Landing Gear	Hardware	General
Bending Passes Below Min	Breaking <input type="checkbox"/>	Maintenance <input type="checkbox"/>
Centre Not Concentric to O/S	Missing <input type="checkbox"/>	Mislabeled <input type="checkbox"/>
Cracks	Size/Length <input type="checkbox"/>	Off-Set <input type="checkbox"/>
Crushed/Crimp at Bending	Spinning <input type="checkbox"/>	Orientation Misread <input type="checkbox"/>
Inspection Strip in Tube	Threading <input type="checkbox"/>	Out of Calibration <input type="checkbox"/>
Other	Wrong <input type="checkbox"/>	Out of Sequence <input type="checkbox"/>
Positioned Wrong		Outside Dimensions <input type="checkbox"/>
Ripples on Inner Bend		Over/Under tolerance <input type="checkbox"/>
Torque Waves in Extrusion		Part Lost <input type="checkbox"/>
Turning Sequence		Part Moved <input type="checkbox"/>
Wave/Twist in Tube		Raw Material <input type="checkbox"/>
	Drill Holes	Other <input type="checkbox"/>
	Misaligned <input type="checkbox"/>	
	Ovalized <input type="checkbox"/>	
	Over/Undersized <input type="checkbox"/>	
	Too Many <input type="checkbox"/>	

Work Order ID 85986

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85986

Page 3

Item ID: D212-664-101TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2Start Date: 19/06/2012 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	*NR1*
	QC:	Date:	SPC (Y/N):	Date:		Stop	*NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140 *140* QC	QC8- Inspect parts - second check	0.00							 12-7-17
Quality Control	Memo	0.00							
	+ CHECK ULTRA SONIC MEASUREMENT AND ORIENTATION FOR BENDING								
145 *145* Crosstubes	Memo	0.00							 12-7-18
Crosstubes	GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.								
150 *150* HandFXtube	Crosstubes Chemical Conversion	0.00							 12-7-17
Hand Finishing Crosstubes	Memo	0.00							

*1- Pressure Wash.**JUL 07 2012 - Acu Etch -*

NCR: Yes / No

DQA: Date:

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____				DISPOSITION		AGAINST DEPARTMENT/PROCESS					
				Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> Other <input type="checkbox"/>	Engineering <input type="checkbox"/> Quality <input type="checkbox"/>			
Part No. _____											
NCR No. _____											
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Offset/Setup											
Other											
Process											
Supplier											
Training											
Unauthorized											
FAULT CATEGORY											
Landing Gear				Hardware		General					
Bending Passes Below Min Centre Not Concentric to O/S Cracks Crushed/Crimp at Bending Inspection Strip in Tube Other Positioned Wrong Ripples on Inner Bend Torque Waves in Extrusion Turning Sequence Wave/Twist in Tube				Breaking <input type="checkbox"/> Missing <input type="checkbox"/> Size/Length <input type="checkbox"/> Spinning <input type="checkbox"/> Threading <input type="checkbox"/> Wrong <input type="checkbox"/>	Drill Holes Misaligned <input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Undersized <input type="checkbox"/> Too Many <input type="checkbox"/>	Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Documentation/Data <input type="checkbox"/> Finish <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Inspection Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Jigs/Fixtures/Tooling <input type="checkbox"/> Kit Incorrect <input type="checkbox"/> Kit Missing <input type="checkbox"/>	Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Off-Set <input type="checkbox"/> Orientation Misread <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Lost <input type="checkbox"/> Part Moved <input type="checkbox"/> Raw Material <input type="checkbox"/>	Set-up <input type="checkbox"/> Supplier <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other <input type="checkbox"/>			

Work Order ID 85986

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85986

Page 4

Item ID: D212-664-101TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2

Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	*NR1*
						Stop	*NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 *160* QC Quality Control	QC7-Inspect Chemical Conversion Coat <i>MJS</i> Memo	0.00							<i>DP</i> 12-7-18

170 *170* Packaging Packaging	Packaging Memo	0.00	<i>JW</i>	12-7-18
	Identify and Stock in kanban rack Location: <i>LCG</i>			

180 *180* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00		
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12/7/18 JJ
MF
12-07-18

Picklist Print

June-19-12 1:15:40 PM

Page 1

Work Order ID: 85986**Parent Item:** D212-664-101TRN**Parent Item Name:** Crosstube Turning Detail

85986
D212-664-101TRN

Start Date: 19/06/2012**Required Date:** 03/07/2012**Start Qty:** 1.00**Required Qty:** 1.00

Comments:
 IPP Rev:A 08-03-06 new issue DD verified by:ec
 IPP Rev B 08.04.02 removed Polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128		Manufactured	No			120	Each	20.0000	1	1		**	

D6005-128

Crosstube Material

Location	Loc Qty	Loc Code
LG	20	
	20	

69796

mm.L 12/07/15

NCR: Yes / No

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order: _____	DISPOSITION	AGAINST DEPARTMENT/PROCESS					
Part No. _____	Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> Other <input type="checkbox"/>	Engineering <input type="checkbox"/> Quality <input type="checkbox"/>		
NCR No. _____							

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Offset/Setup									
Other									
Process									
Supplier									
Training									
Unauthorized									

FAULT CATEGORY

Landing Gear	Hardware			General			
	<input type="checkbox"/> Bending Passes Below Min	<input type="checkbox"/> Breaking	<input type="checkbox"/> Burrs	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Set-up		
	<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> Missing	<input type="checkbox"/> Contamination	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Supplier		
	<input type="checkbox"/> Cracks	<input type="checkbox"/> Size/Length	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Off-Set	<input type="checkbox"/> Temperature/Cure		
	<input type="checkbox"/> Crushed/Crimp at Bending	<input type="checkbox"/> Spinning	<input type="checkbox"/> Documentation/Data	<input type="checkbox"/> Orientation Misread	<input type="checkbox"/> Weld		
	<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Threading	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Calibration	<input type="checkbox"/> Wrong Stock Pulled		
	<input type="checkbox"/> Other	<input type="checkbox"/> Wrong	<input type="checkbox"/> Inspection Incomplete	<input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Other		
	<input type="checkbox"/> Positioned Wrong	Drill Holes			<input type="checkbox"/> Outside Dimensions		
	<input type="checkbox"/> Ripples on Inner Bend	<input type="checkbox"/> Misaligned	<input type="checkbox"/> Inspection Unqualified	<input type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Part Lost		
	<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Ovalized	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Jigs/Fixtures/Tooling	<input type="checkbox"/> Part Moved		
	<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Over/Undersized	<input type="checkbox"/> Kit Incorrect	<input type="checkbox"/> Raw Material			
	<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Too Many	<input type="checkbox"/> Kit Missing				

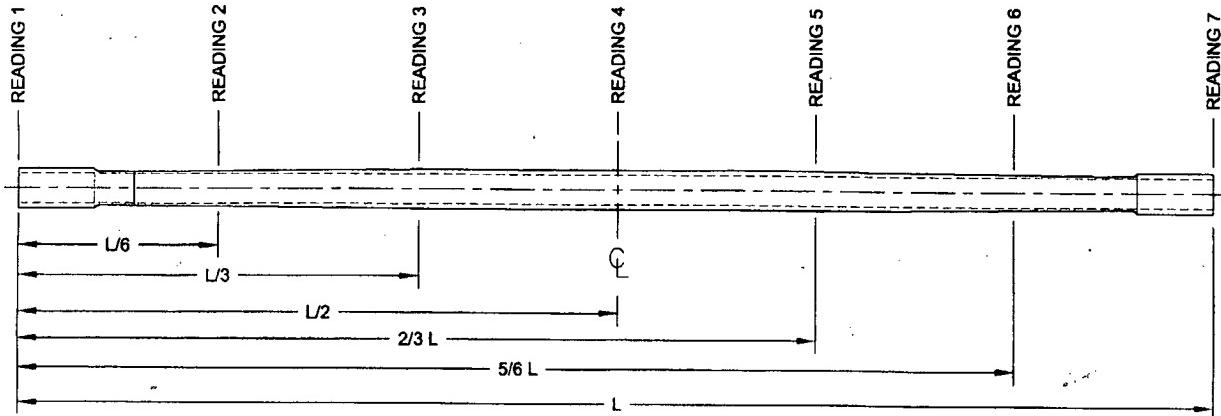
DART AEROSPACE LTD	Work Order:	85986
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	200	-	vern	CNC-08
	R0.063	+/-0.010	.063	-	RG	
	2.740	+0.005/-0.000	2.740	/	vern	CNC-08
	5.097	+/-0.030	5.097	/		
	2.304	+0.005/-0.000	2.309	/		
	2.340	+0.005/-0.000	2.342	/		
	2.398	+0.005/-0.000	2.402	/		
	2.448	+0.005/-0.000	2.452	/		
	2.498	+0.005/-0.000	2.502	/		
	2.549	+0.005/-0.000	2.553	/		
	2.599	+0.005/-0.000	2.602	/		
	2.671	+0.005/-0.000	2.674	/		
	2.701	+0.005/-0.000	2.701	/		
SIDE B	0.200	+/-0.010	200	-	vern	CNC-08
	R0.063	+/-0.010	.063	-	RG	
	2.740	+0.005/-0.000	2.740	-	vern	CNC-08
	5.097	+/-0.030	5.097	-		
	2.304	+0.005/-0.000	2.309	-		
	2.340	+0.005/-0.000	2.343	/		
	2.398	+0.005/-0.000	2.403	/		
	2.448	+0.005/-0.000	2.453	-		
	2.498	+0.005/-0.000	2.502	/		
	2.549	+0.005/-0.000	2.553	-		
	2.599	+0.005/-0.000	2.603	/		
	2.671	+0.005/-0.000	2.673	/		
	2.701	+0.005/-0.000	2.701	/		
	126.514	+/-0.020	126.514	/	tape	LG-22

DART AEROSPACE LTD	Work Order:	85986
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.379	.386	.383	.376	.01	
READING 2 L= 15	.206	.222	.218	.204	.018	
READING 3 L= 31	.287	.312	.307	.285	.027	
READING 4 L= 63	.373	.376	.395	.390	.022	0.048"
READING 5 L= 31	.276	.336	.316	.267	.069	OK, ORIENT WITH 0.267 DIM UP/DOWN IN BENDER.
READING 6 L= 15	.194	.239	.227	.193	.047	Dwg = 0.285"
READING 7 L=cuff	.368	.381	.394	.381	.026	IP 12.02.16

Calibration Result

Actual Block Thickness: 0.285

Sitescan 250 Measured Thickness: 0.283

Measured by:	<u>gmn-l</u>	Audited by:	<u>DJ</u>	Preliminary Approval:	
Date:	12/07/16	Date:	12-7-17	Date:	

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
B	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	
C	07.05.28	Dwg Rev updated	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	
E	12.06.04	Wall thickness form added	KJ	<u>MM</u>

Item	Qty -141	Qty -141B	Part Number	Description
1	X		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.514±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF
USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)
D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY

RETURN TO

ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 05986 MLJ

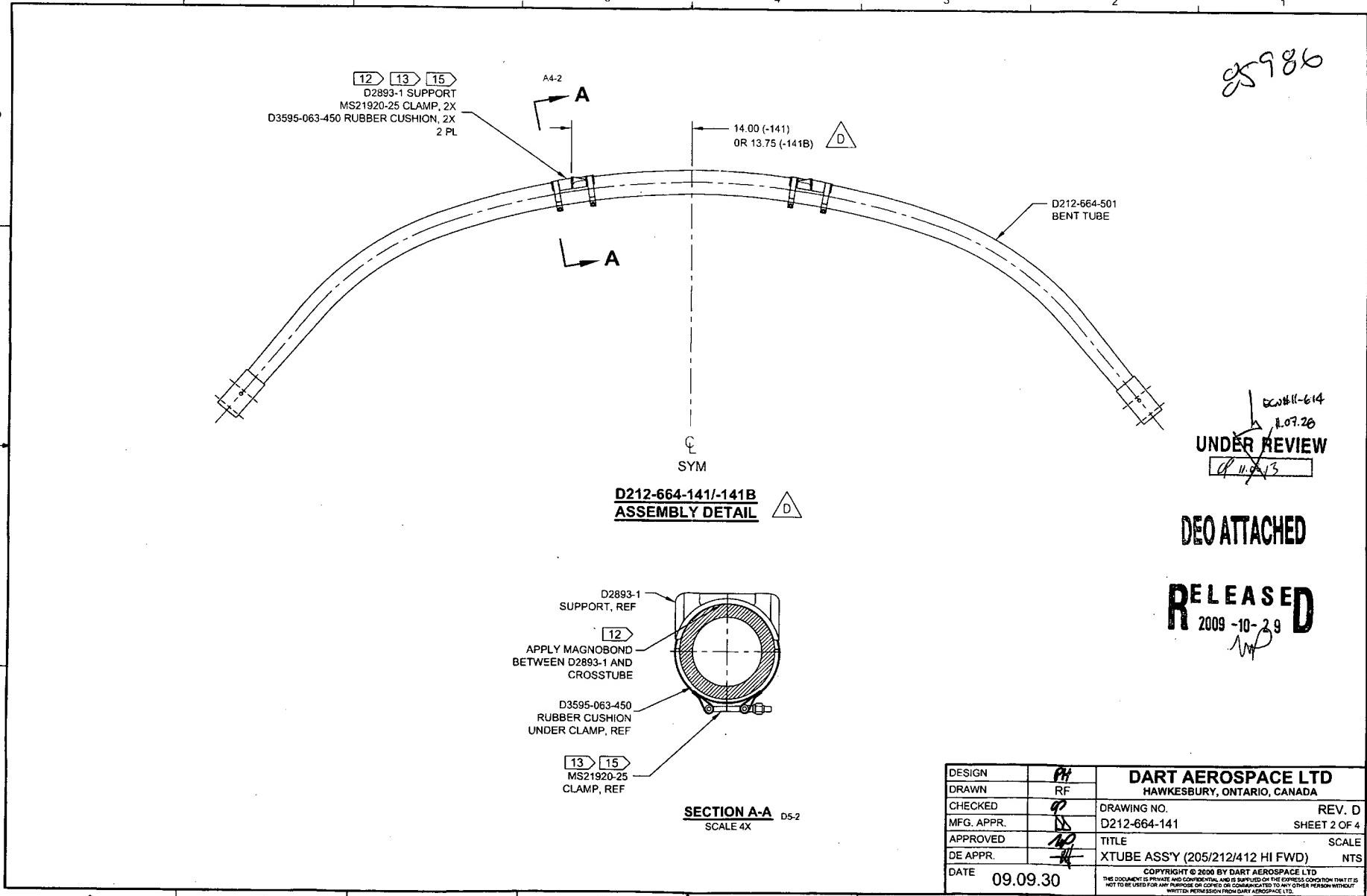
12/06/19

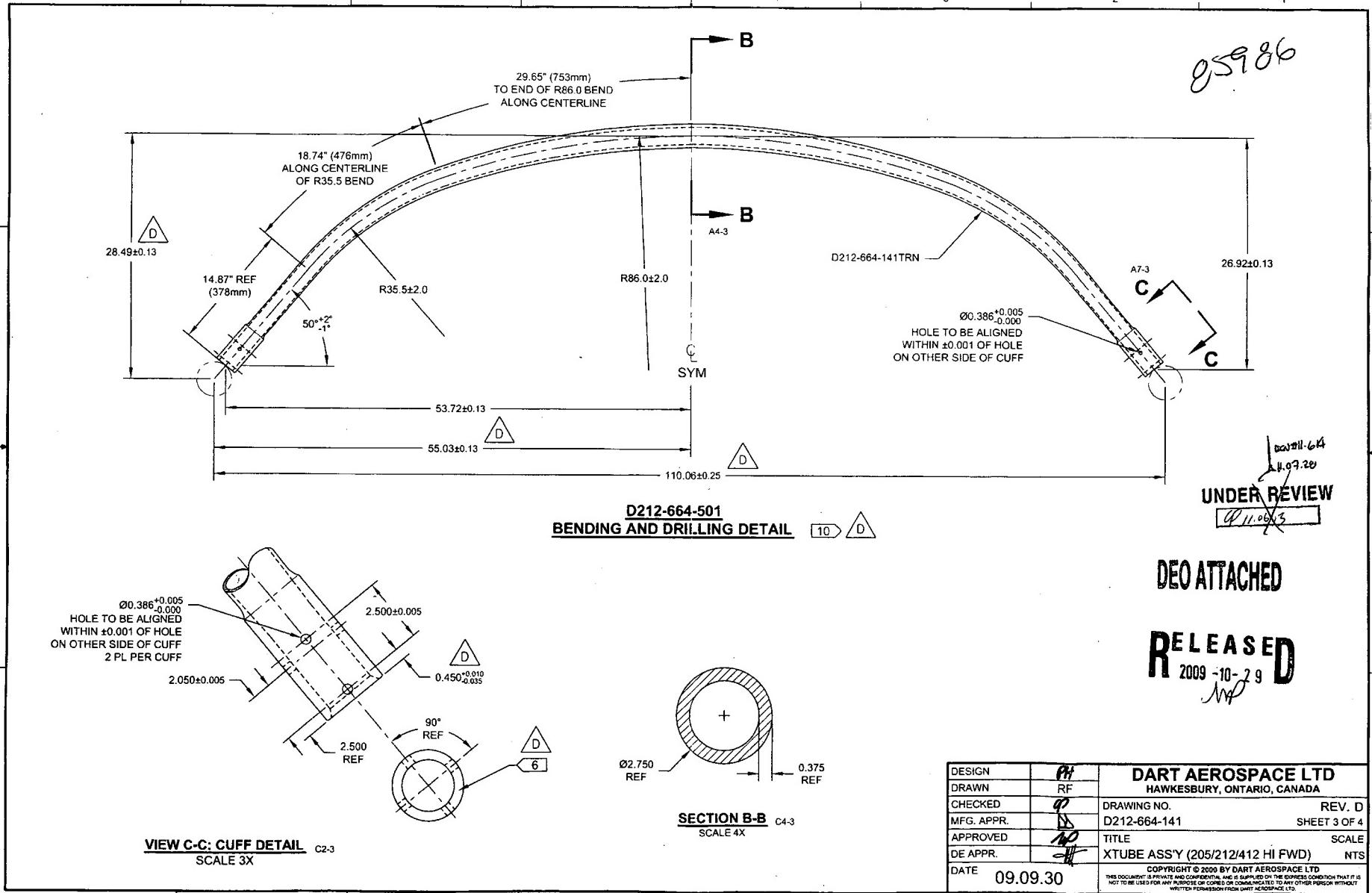
REMOVED FROM UNDER REVIEW 9/22
UNDER REVIEW 12/07/264/16/13
FOR PAY SEALING SUPPORT

DEO ATTACHED

RELEASED
2009-10-29
M

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE, TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PP	DRAWING NO.	REV. D
MFG. APPR.	DN	D212-664-141	SHEET 1 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	SH	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





8

7

6

5

4

3

2

1

25986

C2-4 SEE DETAIL D
R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

2.701^{+0.005}_{-0.000} TAPER UNIFORMLY FROM
THROUGH TO 2.772^{+0.005}_{-0.000} RUNNING OFF PART



D212-664-141TRN
TURNING DETAIL

A4 SEE DETAIL E
SYM

A4 SEE DETAIL F

A4 SEE DETAIL G

A4 SEE DETAIL H

A4 SEE DETAIL I

A4 SEE DETAIL J

UNDER REVIEW
[Signature]

DE ATTACHED
[Signature]

RELEASED
[Signature]
 R 2009-10-29

DESIGN	RH	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	Q	DRAWING NO.
MFG. APPR.	Q	D212-664-141
APPROVED	RP	REV. D
DE APPR.	RP	SHEET 14 OF 4
DATE	09.09.30	SCALE NTS



DETAIL E: TAPER RUN-OFF C5-4
NOT TO SCALE



85986

DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.		
DATE 11.04.07	DATE 11.04.11	DATE 11.04.12	DATE 11/04/12	DATE 11.04.12		

PURPOSE:
ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

CHANGE:

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND
 PAINT OUTSIDE PER DART QSI 005 4.2
 REMOVE MASKING AND APPLY CLEAR COAT

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2

RELEASED
2011-04-18

UNDER REVIEW

11/06.13
 D212-664
 11.07.28

85986

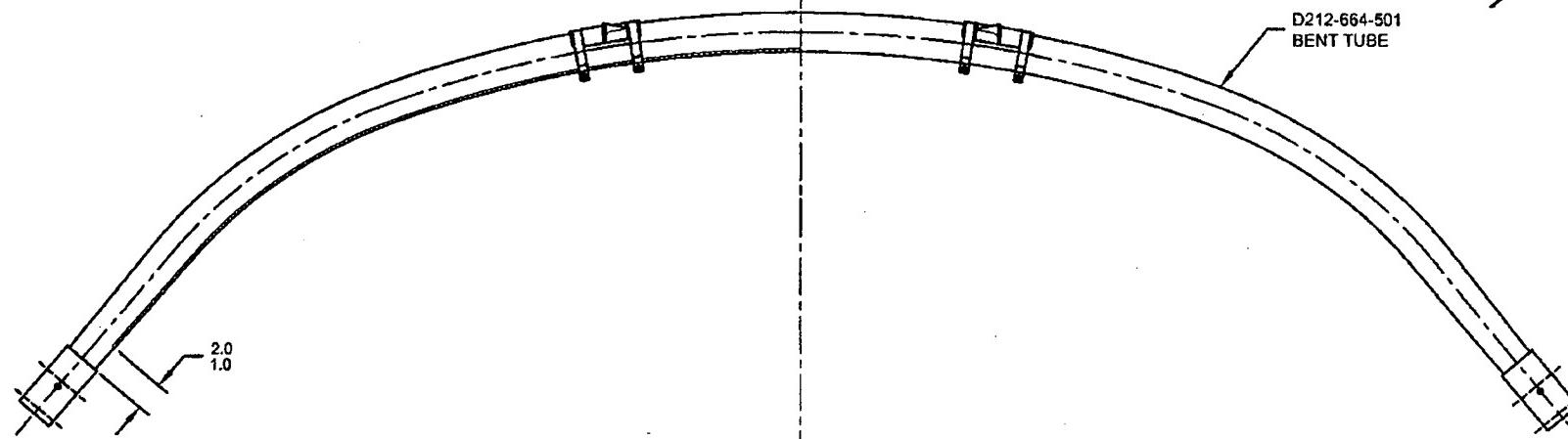
DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN DATE 11.04.07	CHECKED CP DATE 11.04.11	MFG. APPR. E DATE 11.04.12	APPROVED WD DATE 11/04/12	DE APPR. H DATE 11.04.12		

UNDER REVIEW

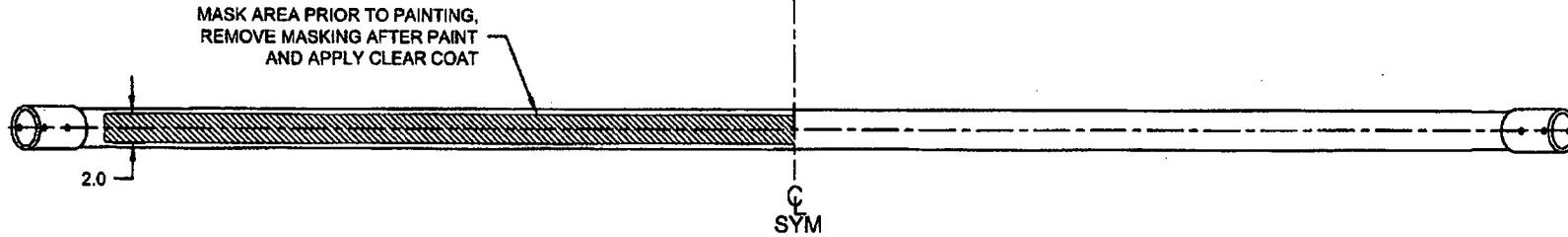
GP 11/06/13

ECN # 11-614

JL 07.28

IS:WAS:

D212-664-141/141B
ASSEMBLY DETAIL



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DRAWING NO. D212-664-141	TITLE CROSSTUBE ASS'Y (205 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-141-D-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>DP</i>	CHECKED <i>A>S</i>	MFG. APPR. <i>AS</i>	APPROVED <i>MD</i>	DE APPR. <i>MM</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11.07.21	DATE 11.07.21	DATE 11.07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:**IS:**

Item	Qty -141	Qty -141B	Part Number	Description
7	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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